

Delaware Bay Landscape

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This landscape includes Cumberland, Cape May, and southern Atlantic counties and parallels the coastline of the Delaware Bay and the Cape May Peninsula, from Oyster Cove to Great Egg Harbor. The Delaware Bay and the Cohansey, Maurice, and Tuckahoe Rivers are the most prominent aquatic features of this landscape. The region may be divided into five zones: Cohansey River, Maurice River, Tuckahoe River, Delaware Bay shoreline, and Cape May peninsula. The boundaries of these zones were determined first by general habitat types and second by watershed (HUC 14) lines. The shoreline zone was defined to generally follow the woodline between marsh and upland habitats.

A. Ecological Units in the Delaware Bay Landscape

The Delaware Bay Landscape is within the Middle Atlantic Coastal Plain Section and crosses the southern extent of both the New Jersey Inner Coastal Plain (232Ac) and New Jersey Outer Coastal Plain (232Ab) subsections.

B. Geology and Climate

The Delaware Bay Landscape is within the Coastal Plain physiographic province. The landscape gently rises from the Delaware Bay and the Atlantic Ocean coastlines to 36 meters (118 ft.) above sea level. The average temperature across the New Jersey Inner and Outer Coastal Plain subsections is between 10.5 to 12.2°C (51 to 54°F) and the growing season varies from 180 to 225 days. The average annual precipitation is between 101.6 and 116.8 centimeters (40 to 46 in.).

C. Habitats

This landscape is bordered on the east by the expansive salt marsh between the mainland and the Atlantic Ocean barrier islands, to the northeast by the Pinelands, and on the west by the Delaware Bay (Figure 11). The upland forests and forested wetlands of the Delaware Bay Landscape (100,886 hectares, 389.5 sq. mi.) include pitch pine, oaks, black cherry, and sweet gum. These forests, particularly in the Cape May peninsula, support the majority of New Jersey's neotropical birds. The wetlands of Delaware Bay (33,897 hectares, 130.8 sq. mi.) include extensive saltwater marshes. The sandy overwash beaches (312 hectares, 1.2 sq. mi.) are a critical stopover for migrating shorebirds. There are agricultural lands as well, producing lettuce, peppers, tomatoes, cabbage, and soybeans on much of the 28,798 hectares (111.1 sq. mi.) of grasslands, which are not necessarily suitable habitats for grassland species. Similarly, scrub/shrub habitat is included in the "forest" and "forested wetlands" habitats on the Landscape Maps. Federal, state agencies, and nonprofit conservation organizations own and manage a large percentage of the Delaware Bay landscape. This region has the highest concentration of rare and endangered wildlife in New Jersey, accompanied by the lowest density of urban development in the state. The Delaware Bay Landscape is a region of global importance and offers considerable opportunities for conservation.

Conservation Zones in the Delaware Bay region are:

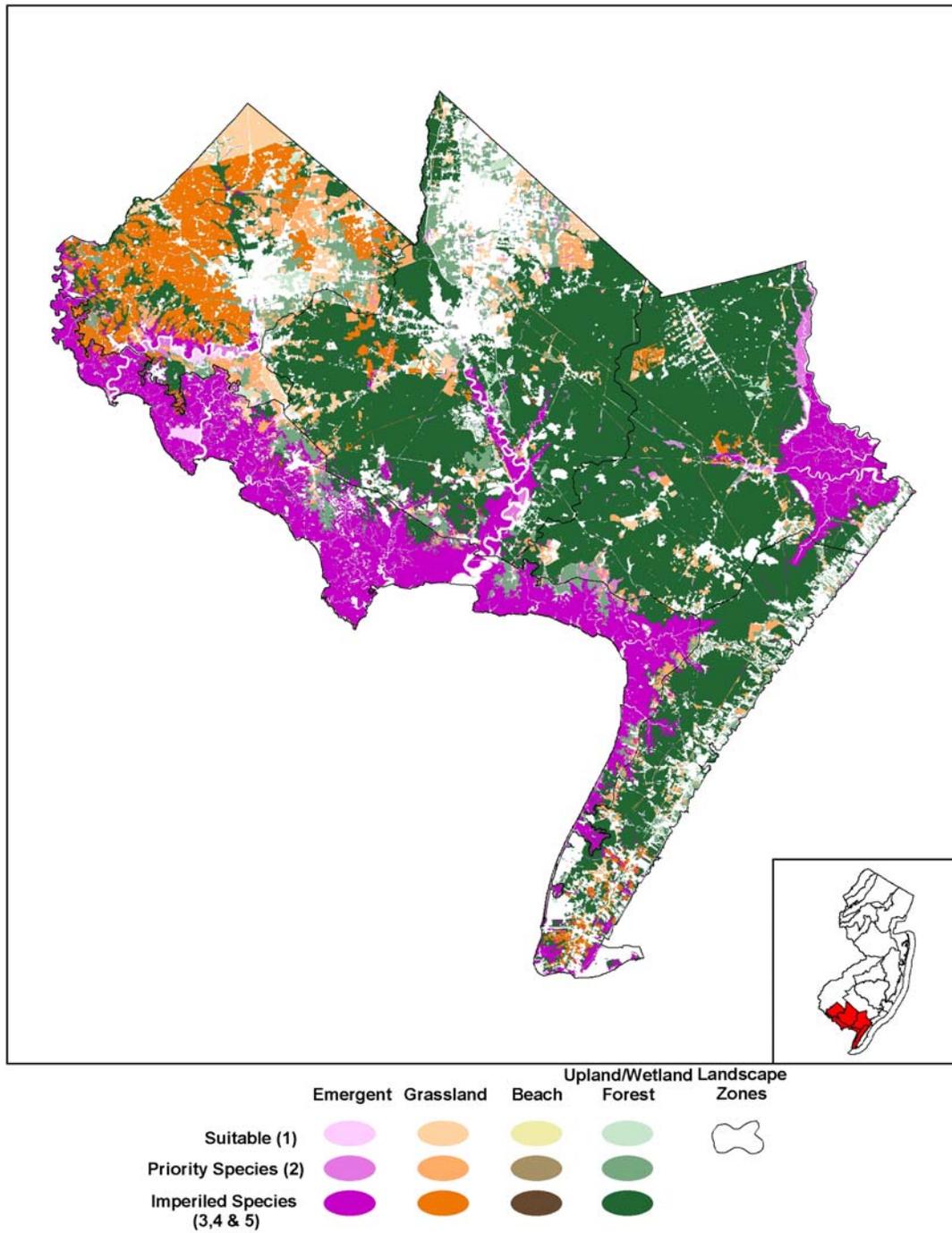
- (1) Cohansey River
- (2) Maurice River Watershed
- (3) Tuckahoe River Watershed.
- (4) Delaware Bay Shoreline
- (5) Cape May Peninsula

D. Wildlife of Greatest Conservation Need

The Delaware Bay Landscape is essential for the viability of national and international bird migrations as well as rare New Jersey wildlife. This region includes the Delaware Bay coast and marshes, critical stopover habitat for Western Hemispheric migratory shorebirds, including red knots, which depend on this coastline and an abundant food supply. This region also includes the Cape May Peninsula, nationally recognized for its high-density migration of passerines, American woodcock, and raptors that are funneled along the Atlantic and Delaware Bay coasts. The Delaware Bay region supports the largest portion of the state's bald eagle population, and has been essential to the recovery of the eagle in the state. The Delaware Bay region is a critical migration and wintering area for American black ducks in the Atlantic Flyway. The marshes of the large rivers of this region support one of the largest fall concentrations of sora in the Atlantic Flyway. The region is crucial to the state's population of eastern tiger salamander, Cope's gray treefrog, northern harrier and black rail. In addition, the region holds some of the state's largest contiguous forest blocks, which support species that depend on unbroken forest habitats – some of the most rare and sensitive species in the state.

Delaware Bay beaches, wetlands, forests, and grasslands support an abundance of rare and migratory wildlife. Included are federally-listed aquatic species (sea turtles and shortnose sturgeon) marginally supported in this region. There are 13 state endangered, 14 state threatened, and 128 special concern and regional priority wildlife species. The bald eagle, black skimmer, Henslow's sparrow, least tern, northern harrier,

Figure 11. Critical landscape habitats within the Delaware Bay Landscape and associated conservation zones as identified through the Landscape Map (v2).



peregrine falcon, red-shouldered hawk, short-eared owl, sedge wren, vesper sparrow, corn snake, Cope’s gray treefrog, eastern tiger salamander, and bronze copper are the state endangered wildlife in the Delaware Bay Landscape. State threatened wildlife include the barred owl, black rail, black-crowned night-heron, bobolink, Cooper’s hawk, grasshopper sparrow, long-eared owl, osprey, red knot, red-headed woodpecker, savannah sparrow, northern pine snake, Pine Barrens treefrog, and frosted elfin. Special concern wildlife include cavity-nesters, coastal marsh birds, colonial waterbirds, forest passerines, grassland birds, and scrub-shrub/open field birds; northern diamondback terrapins, carpenter frogs, and other reptiles and amphibians. In addition, summer populations of forest-dwelling bat species, potentially including the federal endangered Indiana bat, occur in the Delaware Bay.

The following tables list the wildlife of greatest conservation need, the suites of wildlife, and the conservation opportunity areas to conserve them in the Delaware Bay Landscape. The wildlife are prioritized by federal endangered and threatened, state endangered, state threatened, and special concern and regional priority status.

Prioritized List of the Wildlife of Greatest Conservation Need and their Location in the Delaware Bay Landscape

Table DB1. Federal Endangered and Threatened Species*

Common Name	Federal Status & Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Mammals						
Indiana bat	E		R**	R**		
Reptiles						
Green sea turtle	T				I	
Leatherback sea turtle	E				I	
Loggerhead sea turtle	T				I	
Bog turtle	T	R				
Hawksbill sea turtle	E				I	
Kemp’s ridley sea turtle	E				I	
Fish						
Shortnose sturgeon	E & RP				R	

*All Federal Endangered and Threatened species have an Endangered status on the NJ List of Endangered Wildlife

**Potential presence.

T: Federally threatened species.

E: Federally endangered species.

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table DB2. State Endangered Species

Common Name	Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Mammals						
Bobcat			R	R		
Birds						
American bittern	RP	R	R	R		
Bald eagle	T	I	I	I	I	I
Black skimmer	RP				R	
Henslow’s sparrow	RP	R				
Least tern	RP		M		I	
Loggerhead shrike	RP	R				R

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State Endangered Species (continued)

Common Name	Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Birds (continued)						
Northern harrier		I	I	I	I	I
Peregrine falcon			M	M	M	M
Pied-billed grebe	RP					I
Red-shouldered hawk		I	I	I		I
Sedge wren	RP				I	
Short-eared owl	RP				I	
Vesper sparrow		I	I			
Reptiles						
Corn snake			I			
Timber rattlesnake			R	R		
Amphibians						
Cope's gray treefrog		M	I	I		I
Eastern tiger salamander			I	I		I
Insects						
Bronze copper		I	I			

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table DB3. State Threatened Species

Common Name	Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Birds						
Barred owl		I	I	I		I
Black rail	RP		I		I	
Black-crowned night-heron	RP		I	I	I	I
Bobolink	RP	I	M			
Cooper's hawk	RP	I	I	I		I
Grasshopper sparrow	RP	I	M			
Long-eared owl			R	I		
Osprey		I	I	I	I	I
Red knot	RP		I	I	I	I
Red-headed woodpecker	RP	I	I	I		I
Savannah sparrow		I	M			
Yellow-crowned night heron	RP			R	R	R
Reptiles						
Northern pine snake			I	I		I
Amphibians						
Pine Barrens treefrog			I	I		I
Insects						
Frosted elfin			I	I		I

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table DB4. Nongame Species of Conservation Concern

Common Name	Conservation Status	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Mammals						
Eastern red bat	RP	R**	R**	R**		R**
Eastern small-footed myotis	S1, G3	R**	R**	R**		R**
Hoary bat	RP	R**	R**	R**		R**
Marsh rice rat	S3, G5				R	
Silver-haired bat	RP	R**	R**	R**		R**
Southern bog lemming	S2, G5		R	R		

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Birds						
Acadian flycatcher	RP	M	M	M		M
American golden-plover	RP					
American kestrel	SC/RP	I	I	I		I
American oystercatcher	SC/RP		M	M	M	M
Baltimore oriole	RP	I		I		I
Black tern	SC/RP				M	
Black-and-white warbler	RP	I	I	I		I
Black-billed cuckoo	RP	I	I	I		I
Black-throated green warbler	SC		I			
Blackburnian warbler	RP		M	M		M
Blue-winged warbler	RP	I	I	I		I
Broad-winged hawk	SC/RP	M	M	M		M
Brown thrasher	RP	I	I	I		I
Canada warbler	SC/RP		M	M		
Cattle egret	RP			M		M
Chimney swift	RP	I	I	I		I
Chuck-will's-widow	RP	I	I	I		I
Common barn owl	SC	I	I	I	I	I
Common nighthawk	SC		I	I		I
Common tern	SC/RP			I	I	I
Dickcissel	RP	I				
Eastern kingbird	RP	I	I	I		
Eastern meadowlark	SC/RP	I	M	M		M
Eastern screech-owl	RP	M	M	M		M
Eastern towhee	RP	I	I	I		I
Eastern wood-pewee	RP	I	I	I		I
Field sparrow	RP	I	M	M		M
Forster's tern	RP			M	M	M
Glossy ibis	RP			M	I	M
Gray catbird	RP	M	M	M		M
Great blue heron	SC/RP	M	M	M	M	M
Great crested flycatcher	RP	I	I	I		I
Great egret	RP	M	M	M	M	M
Greater shearwater	RP					
Green heron	RP		M	M	M	M
Horned grebe	RP					
Hooded warbler	RP		M	M		M
Horned lark	SC	I				
Indigo bunting	RP	I	I	I		I
Kentucky warbler	SC/RP	I	I	I		I
King rail	SC/RP		M	M	M	M
Least bittern	SC/RP	M	M	M	M	M
Little blue heron	SC/RP		M		M	M
Louisiana waterthrush	RP	M	M	M		M
Mallard	RP	M	M	M	M	M
Marsh wren	RP	M	M	M	M	M
Northern flicker	RP	I	I	I		I
Northern gannet	RP					
Northern parula	SC		M	M		M
Pine warbler	RP	M	M	M		M
Prairie warbler	RP	I	I	I		I
Prothonotary warbler	RP	I	I	I		I
Razorbill	RP					
Red-throated loon	RP					
Rose-breasted grosbeak	RP			I		
Ruddy turnstone	RP		I		I	
Saltmarsh sharp-tailed sparrow	RP		I	I	I	I
Sanderling	SC/RP				I	
Scarlet tanager	RP	I	I	I		I
Seaside sparrow	RP	M	M	M	M	M

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Birds (continued)						
Semipalmated sandpiper	RP		I		I	
Sharp-shinned hawk	SC/RP		M	M	M	M
Snowy egret	SC/RP		M	M	I	M
Spotted sandpiper	SC		M	M		
Tricolored heron	SC/RP				I	M
Veery	SC		I	I		
Whip-poor-will	RP	I	I	I		I
Willet	RP		M	M	M	M
Willow flycatcher	RP	I	I	I		I
Wood thrush	RP	I	I	I		I
Worm-eating warbler	RP		M	M		M
Yellow-billed cuckoo	RP	I	I	I		I
Yellow-breasted chat	SC/RP	I	I	I		I
Yellow-throated vireo	RP	I	I	I		I
Yellow-throated warbler	RP	M	M	M		M
Reptiles						
Eastern box turtle	SC	M	M	M		M
Eastern kingsnake	SC	M	M	M		M
N. diamondback terrapin	SC		I	I	I	
Spotted turtle	SC	M	M	M		M
Amphibians						
Carpenter frog	SC	M	M	M		M
Fowler's toad	SC	M	M	M		M
Marbled salamander	SC	M	M	M		M
Insects						
Dotted skipper, <i>Hesperia attalus</i>	SC		M			
Hessel's hairstreak, <i>Callophrys hesseli</i>	SC	M	M			
A geometrid moth, <i>Eusarca fundaria</i>	S2S3, G4				X	
A geometrid moth, <i>Idaea violacearia</i>	S1S3, G4		X			
A geometrid moth, <i>Metarranthis sp 1</i>	S2, G3		X	X		
A noctuid moth, <i>Apamea inebriata</i>	S2S4, G4		X			
A noctuid moth, <i>Cucullia alfarata</i>	S2?, G4				X	X
A noctuid moth, <i>Macrochilo santerivalis</i>	S1S3, G3G4		X			
A noctuid moth, <i>Macrochilo sp 1</i>	S3, G3		X			
A noctuid moth, <i>Meropleon cosmion</i>	S1S2, G4			X		
A noctuid moth, <i>Meropleon titan</i>	S1, G2G4	X			X	
Chain fern borer moth, <i>Papaipema stenocelis</i>	S3, G4		X	X		
Half yellow moth, <i>Tarachidia semiflava</i>	S2S4, G4		X			
Lemmer's pinion moth, <i>Lithophane lemmeri</i>	S2, G3G4		X			
Maritime sunflower borer, <i>Papaipema maritime</i>	S1, G4					X
Pine Barrens bluet, <i>Enallagma recurvatum</i>	S3, G3		X	X		
Pink streak, <i>Faronta rubripennis</i>	S3, G3G4	X			X	
Precious underwing, <i>Catocala pretiosa pretiosa</i>	S2S3, G4		X	X	X	X

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Nongame Species of Conservation Concern (continued)

Common Name	Conservation Status	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Insects (continued)						
Rare skipper, <i>Problema bulenta</i>	S2, G2G3	X	X	X	X	X
Regal moth, <i>Citheronia regalis</i>	S3, G5			X		
Rippled wave, <i>Idaea obfusaria</i>	S2S4, G4G5		X	X		
Scarlet bluet, <i>Enallagma pictum</i>	S3, G3		X	X		
The consort, or consors underwing, <i>Catocala consors sorsconi</i>	S1S3, G4		X			
Fish						
Atlantic sturgeon	SC*/RP			X	X	X

* Federal species of special concern

**Potential presence

SC: Species of special concern as identified within the state.

RP: Species is of regional priority; currently only mammals, reptiles, and insects are not identified due to information gaps.

S & G: Conservation Ranks defined in Appendix I.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

X: Species present. Management strategy not yet determined.

Table DB5. Game Species of Regional Priority

Note: Species identified within the table have seasonal harvests within New Jersey.

Common Name	Species of Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Birds						
American black duck	RP	M	M	M	M	M
American woodcock	RP	I	I	I	I	I
Black scoter	RP				R	R
Bufflehead	RP	M		M	M	M
Canada Goose (Atlantic population)	RP	M	M	M	M	M
Canvasback	RP			I	I	
Clapper rail	RP	M	M	M	M	M
Greater scaup	RP			I	I	
Lesser scaup	RP			I	I	
Long-tailed duck	RP				R	R
Northern bobwhite quail	RP	R	R	R	R	R
Northern pintail	RP	I	I	I	I	I
Surf scoter	RP				R	R
Virginia rail	RP	R	R	R	R	R
White-winged scoter	RP				R	R
Wood duck	RP	M	M	M	M	M

RP: Species of regional priority; currently mammals, reptiles, and insects are not identified due to information gaps.

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table DB6. Fish Species

Note: Species identified within the table are nongame species within New Jersey, currently without state or regional status.

Common Name	Species of Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Fish						
Margined madtom (<i>Noturus insignis</i>)	-		X			

X: Species present. Management strategy not yet determined.

Table DB7. Game Species

Note: Species identified within the table have seasonal harvests within New Jersey and currently are not identified as regional priority species, but they are considered by NJDFW to be species of concern.

Common Name	Species of Regional Priority	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Mammals						
River otter	-	M	M	M	M	M
Birds						
Ruffed grouse	-	R				
Sora rail	-	R	R	R	R	R

M: Maintain population, species occurs within specific habitat(s) of landscape region.

I: Increase and stabilize population, species occurs within specific habitat(s) of landscape region.

R: Research and restore population, suitable habitat, species presence unknown.

Table DB8. Suites of Wildlife and their Location in the Delaware Bay Landscape

Common Name	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Mammals					
Forest Dwelling Bats	X	X	X		X
Birds					
Beach-nesting Birds			X	X	
Interior-forest Cavity-nesters		X	X		X
Savannah and Forest-edge Habitat Cavity Nesters	X	X	X		X
Coastal High Marsh Birds	X	X	X	X	
Coastal Low Marsh Birds	X	X	X	X	
Colonial Waterbirds	X	X	X	X	X
Forest Passerines	X	X	X		X
Forest Raptors	X	X	X		X
Freshwater Wetland Birds	X	X	X		X
Grassland Birds	X	X			
Migratory Shorebirds			X		X
Migratory Songbirds and Raptors	X	X	X	X	X
Scrub-shrub/Open Field (3-7 yrs) Birds	X	X	X		X
Early Succession (0 -3 years) Open Field Birds	X				
Waterfowl	X	X	X	X	X
Reptiles					
Forest Dwelling Reptiles		X	X		X
Reptile Inhabitants of Wetland, Marsh and Bog	X	X	X	X	X
Reptiles Associated with water (lakes, ponds, streams)	X	X	X		X
Reptiles of Special Concern	X	X	X	X	X
Amphibians					
Amphibians of Special Concern	X	X	X		X

Suites of Wildlife and their Location in the Delaware Bay Landscape (continued)

Common Name	Cohansey River	Maurice River Watershed	Tuckahoe River Watershed	Delaware Bay Shoreline	Cape May Peninsula
Amphibians (continued)					
Vernal Pool and Vernal Sinkhole Breeders	X	X	X		X
Insects					
Lepidoptera of Federal or State Legal Status		X	X		X
Lepidoptera of Special Concern	X	X			X
Odonata		X	X		X

X: Species occurs within the identified habitat.

E. Threats

The Delaware Bay region ranges from agricultural land around the Cohansey to forests in the Maurice, Tuckahoe and peninsula areas and to the saltmarshes of the bayshore. The overall threat to habitat and wildlife is habitat loss due to development, particularly on the Cape May Peninsula. Fragmentation of forests is a major threat to the forested areas of the Maurice and Tuckahoe, because of the forest dependent species that depend on them for survival. The publicly owned land, particularly in the Maurice and Tuckahoe areas, will be absolutely essential as core habitat for rare wildlife populations in the future; expanding those lands by both acquisition and private lands management will help to ensure viability of rare species in the state. Invasive plants and animals displace native species. Recreation on the waterways of the rivers and bays, in the resort areas of the peninsula, and illegal off-road vehicle use in forests continues to grow and should be addressed in management and education. Delaware Bay, as a major shipping and transportation port will continue to hold the threat of oil and chemical contamination to riparian habitats.